

Rejections Under 35 U.S.C. 103(a) Over Soma and Soma in View of JP '913

Claims 4-11 and 24-28 are rejected under 35 U.S.C. 103(a) as being obvious over Soma (U.S. Patent 5,411,767). Claims 4-28 are rejected under 35 U.S.C. 103(a) as being obvious over JP '913 (JP 8-50913) in view of Soma. Applicants maintain traversal.

Distinctions of the invention over JP '913 and Soma have been placed before the Examiner. The Examiner admits that JP '913 fails to teach the material of the interconnector and relies upon the teachings of Soma for the material of the interconnector in making both of his rejections. However, Soma pertains to a thermal spraying method for producing an interconnector for a solid electrolyte type fuel cell. Soma fails to teach or suggest a sintered or co-sintered interconnector.

In considering the patentability of the invention over the prior art of JP '913 and Soma, the Examiner is respectfully requested to consider the following two points:

1) It is not possible to produce a compact film when plasma spraying is performed. However, a compact film can be produced when a sintering process is employed.

2) Evidence of this difference in compactness is demonstrated by photographs being presented for the Examiner's consideration.

In Soma, the film is treated by heating at a temperature of 1250°C following the application of plasma spraying. However, the purpose of this heat treatment is directed to annealing the film. When considering both the temperature of the heat treatment and the melting point of the material, it is clear that it is not possible to produce a compact film. In contrast, there is a high risk that the film will peel off due to the difference in the thermal expansion coefficients of the respective layers that may result during the heat treatment at the high temperature of 1250°C.

In the past, the inventor has manufactured solid electrolyte fuel batteries employing the plasma spraying method from 1982 to 1992. However, the films formed using the conventional plasma spraying art in the solid electrolyte fuel batteries fail to have sufficient compactness resulting in a propensity to generate gas leakage. For this reason, the inventors performed experimental studies to obtain a compact film and to prevent the occurrence of gas leakage. As a result, the inventor unexpectedly discovered that compact films can be formed for solid electrolyte fuel batteries by sintering. Thus, the advantages of a compact film can be obtained.

As a result, a person having ordinary skill in the art would not be motivated by JP '913 and Soma to produce the compact sintered or co-sintered interconnector for a solid electrolyte

battery of the invention. Thus, a *prima facie* case of obviousness has not been made over Soma or JP '913 combined with Soma.

Further, even if it is assumed *arguendo* that the cited prior art is sufficient to assert obviousness, this obviousness is fully rebutted by unexpected results. As further evidence of these unexpected results, please find an additional Declaration Under 37 C.F.R. 1.132 by Toshiro Nishi.

The attached Declaration addresses concerns raised by the Examiner in the Advisory Action mailed November 29, 2002. In the continuation sheet of the Advisory Action, the Examiner asserts that "the Declaration does not appear to state that the materials being compared have the same chemical composition. This would be required for a meaningful comparison." However, page 2, lines 1-4 of the attached Declaration states "To show the superiority of the present invention, I am submitting the attached SEM photomicrograph plasma sprayed material (A) and co-sintered material (B). The materials (A) and (B) being compared have the same chemical composition."

Further, in the Advisory Action, the Examiner asserts that the 1250°C heat treatment step of Soma is equivalent to sintering. However, the fundamental difference between this heat treatment state and sintering has been discussed above.

Yet further, the Examiner is respectfully requested to compare the SEM photomicrographs in the attached Declaration and observe

the fundamental differences between the conventional art plasma sprayed film and the sintered material of the invention. Thus, the advantages of the invention are clear.

As has been shown, the cited prior art fail to allege *prima facie* obviousness over the claimed invention. Further, unexpected results fully rebut any obviousness that can be shown. Accordingly, these rejections are overcome and withdrawal thereof is respectfully requested.

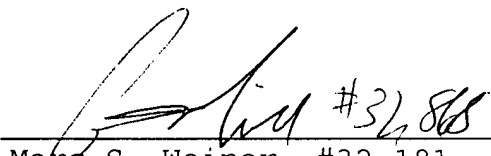
Conclusion


Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Robert E. Goozner, Ph.D. (Reg. No. 42,593) at the telephone number below to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

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